

Econophysics: challenges and promises

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Outline of main points

Econophysics is now 12 years old. The author argues that its main achievement was (and hopefully will be in the future) to try to apply to the social sciences the experimental approach that was so successful in physics and chemistry. Indeed, this approach provides a way to handle what is probably the main challenge of social phenomena, namely the inherent interdependence between different factors which makes it difficult to observe one effect at a time. For this reason social science observations are blurred by a high level of background noise. Personally, I do not know of any effect which can be observed *repeatedly* with a precision better than 10%. This poor accuracy explains why the basic principles of social sciences are not yet established on a firm basis.

However, it is important to realize that this difficulty was also present in physics especially in the earlier days. The “free” fall of an apple is by no means free, except if performed under certain experimental conditions which ensure that the drag plays a negligible role. For instance, the apple must be “big enough”, should not carry any leaves and the duration of the fall must be “short enough”; clearly, in order to define what is meant by “big enough” or “short enough” an extensive experimental study is required. In short, the key to success is to *amplify the effect* that one wants to observe and at the same time to keep all side effects under control. In order to convince the audience that the same methodology can also be applied to the observation of social phenomena, we illustrate that idea through a specific example.

It is a well known fact that the rate of suicide is higher for unmarried than for married persons. However, if one tries to observe this effect in a standard population it is covered and concealed by the background noise of side effects. Yet, by selecting cleverly a population in which the effect under consideration is magnified, the impact of noise can be substantially reduced. For instance, a population composed exclusively of bachelors may provide a good testing ground. So, the crucial question becomes: how can I select a population almost exclusively composed of bachelors. We will see that an ideal testing ground is furnished by the population of Chinese immigrants in the United States in the first half of the 20th century.

After these ideas have been shortly presented, the main purpose of the meeting will be to have a broad discussion with the audience. How can one improve the accuracy of observations, what should be the role of modeling, why is it essential to adopt a *comparative perspective*? All these questions are crucial for the future of econophysics. No doubt that the suggestions, remarks or objections raised by the participants will help us to get a better insight and to go forward.